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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,198	02/26/2002	Eyal Krupka	10559-654001/P13018	8485
20985	7590	11/28/2005	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			AGHDAM, FRESHTEH N	
			ART UNIT	PAPER NUMBER
			2631	
DATE MAILED: 11/28/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/086,198

Applicant(s)

KRUPKA, EYAL

Examiner

Freshteh N. Aghdam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-17 and 19-26 is/are rejected.
- 7) ☒ Claim(s) 9, 18, and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments, see page 9, filed 9/20/2005, with respect to the rejection(s) of claim(s) 1-27 under Wang (US 2003/0118094), Belotserkovski (US 2002/0021750), and Vaananen (US 2003/0091111) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Baier (US 5,185,764), Belotserkovski (US 2002/0021750), and Vaananen (US 2003/0091111).

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6-8, 10, 15-17, 19, and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Baier (US 5,185,764).

As to claims 1, 10, and 19, Baier teaches initializing the parameters of a continuous (i.e. time dependent or time varying) channel tap model (Fig. 2, means 28; Col. 4, Lines 15-18); calculating one or more sets of channel taps from the channel tap model (Fig. 2, means 28 and 31); using the one or more sets of channel taps to estimate one or more symbols in a received data stream (Fig. 2, means 29); calculating

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one or more sets of adaptively updated channel taps from the one or more symbols estimated in the received data stream (Fig. 2, means 29 and 31); and fitting the one or more sets of adaptively updated channel taps to update the parameters of the continuous channel tap model (Fig. 2, means 29 and 31; Col. 4, Lines 58-66; Col. 5, Lines 36-41).

As to claims 6, 15, and 24, Baier teaches iteratively determining the parameters of the channel tap model; and initializing the parameters determined in a previous iteration by fitting the one or more sets of adaptively updated channel taps determined in the previous iteration (Fig. 2, means 28, 29, and 31; Col. 4, Lines 36-47 and 58-66).

As to claims 7, 16, and 25, Baier teaches using the channel tap model to estimate progressively larger numbers of symbols in subsequent iterations of the method (Col. 4, Lines 23-26).

As to claims 8, 17, and 26, Baier teaches terminating the iterative method until a predetermined condition has been met (Col. 5, Lines 36-40).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 11-12, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baier, and further in view of Belotserkovsky et al (US 2002/0021750).

As to claims 2, 11, and 20, Baier teaches all the subject matters claimed above, except for obtaining a first set of channel taps from an input data stream containing a training data stream and a locally generated copy of the training data stream; and initializing the parameters of the channel tap model with the first set of channel taps. Belotserkovsky, in the same field of endeavor, teaches obtaining a first set of channel taps from an input data stream containing a training data stream and a locally generated copy of the training data stream; and initializing the parameters of the channel tap model with the first set of channel taps (Fig. 2, Blocks 54, 58, and 64). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Belotserkovsky with Baier in order to initialize the channel taps for starting the iterations.

As to claims 3, 12, and 21, Baier teaches all the subject matters claimed above, except for running an LMS algorithm to calculate the one or more sets of adaptively updated channel taps from the one or more estimated symbols. Belotserkovsky teaches using an LMS algorithm for tap adaptation (Par. 28). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Belotserkovsky with Baier in order to perform channel tap adaptation by taking into the account no probabilistic assumption (signal model).

Claims 4, 5, 13, 14, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baier, and further in view of Vaananen (US 2003/0091111).

As to claims 4, 5, 13, 14, 22, and 23, Baier teaches all the subject matter claimed above, except for fitting the one or more sets of adaptively updated channel taps to a channel tap model that is linear in time. The use of linear equalizers is well known in the

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art as evidenced by Vaananen. Vaananen teaches an adaptive equalizer in a receiver that is linear in time (Fig. 2, Pg. 2, Par. 20; Pg. 4, Par. 52). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Vaananen with Baier in order to reduce strong intersymbol interference to a low-level signal power (Abstract).

### ***Allowable Subject Matter***

Claims 9, 18, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 9, 18, and 27, the prior art of record fails to teach terminating the iterative method when the number of symbols to estimate is greater than the number of symbols in a data burst.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stenstrom et al (US 6,888,903) see figure 3; Arslan et al (US 6,411,649) see figure 3.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571)

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272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Freshteh Aghdam

November 17, 2005

  
**KEVIN BURD**  
**PRIMARY EXAMINER**